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Robert Leslie Usinger

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Robert Leslie Usinger, Professor of Entomology and Entomologist in the Agricultural Experiment Station, University of California, Berkeley, died in San Francisco, California, on 1 October 1968 after an extended illness. In the latter months of his life, while his health was being undermined by cancer, he completed a term as Chairman of the Division of Entomology and Acarology, Department of Entomology and Parasitology, University of California, Berkeley, served brilliantly as President of both the Entomological Society of America and the Society of Systematic Zoology, dictated a fascinating account of his life,[1] and, if his health had permitted, would have attended the XIIIth International Congress of Entomology in Moscow, 2–9 August 1968, as a guest of the Academy of Sciences, USSR, and spent part of 1969 collecting and studying the Naucoridae of New Guinea with support from the National Science Foundation. To have collected at Wau, New Guinea, would have been the realization of a life-time dream.

In addition to his University position, at the time of his death he was affiliated with the California Academy of Sciences in San Francisco as Research Associate, and, in the same capacity with the Bernice P. Bishop Museum in Honolulu and the American Museum of Natural History in New York. With his untimely death at the age of 55 years, the scientific world has lost an outstanding biologist, an author of numerous zoological books, entomological monographs, and writings on the systematics, bionomics, biogeography and evolution of various groups of Hemiptera; the academic world has lost a highly respected and inspiring teacher; and the world in general a great humanitarian and leader.

Robert Usinger was born on 24 October 1912 at Fort Bragg, Mendocino County, California, the eldest of two sons of Edith Johnson and Henry Clay Usinger. His mother was of Scandinavian origin; the Johnson family having come from Denmark in the early 1800's. His father was of German extraction; the Usinger family having originally

[1] This document, written at my suggestion and with the constant encouragement of his wife, Martha, will be published in the near future as Memoir Number 5 of the Pacific Coast Entomological Society.

come from Usingen in the Taunus Mts. Robert Usinger was one of the relatively few Californians who was a "native son of a native son." When he was a few years old, the family moved from Fort Bragg to San Anselmo for a brief period and then to Oakland, where young Robert, or "Bob" as he was affectionately known to his many friends all through his life, attended grammar school and high school before entering the University of California, where he received the Bachelor of Science degree in 1935 and the Ph.D. degree in 1939. His early memories in Fort Bragg centered around the days in the redwood country, where grandfather Johnson was superintendent of the Union Lumber Mill. He spoke of watching the loading of the big logs onto sailing vessels for their trip to the port of San Francisco, and of standing on "tip-toe" to reach the table to help pound out the whale steaks. During his college years he managed to be active not only in matters entomological, but was a long-time member of the Glee Club, and active in fraternity and campus affairs as well. It was in the Glee Club that he first became acquainted with Richard M. Eakin, now Professor of Zoology, University of California, Berkeley, who became a life-long friend and who delivered the Memorial Address held in his honor at the First Congregational Church of Berkeley on 14 October 1968.

In 1938, Usinger married Martha Boone Putnam, a college classmate, who filled his life with companionship, understanding, and inspiration. Their two children, Roberta Christine Usinger (Mrs. Ronald Manuto), Richard Putnam Usinger, and a grandchild, Benjamin Robert Manuto, also survive him, besides a brother, Russell Usinger.

Among his many activities and honors, some of which will be placed in context in the discussion which follows, it should be mentioned that he served in the Department of Entomology, Bernice Paui Bishop Museum, Honolulu, during 1935 and 1936, the Department of Entomology, California Academy of Sciences, from 1936 to 1939, and joined the faculty of the University of California as Instructor in Entomology and Junior Entomologist in the Agricultural Experiment Station on the Davis Campus in 1939, moving to Berkeley (after service in World War II as Major in the Sanitary Corps, United States Public Health Service), where he rose to the ranks of Professor and Entomologist in 1953. From 1964 to 1968 he served as Chairman, Division of Entomology and Acarology and prior to his death, he was given recognition by the University Administration as one of the most distinguished members of the Berkeley faculty. In 1948–49 he held a National Institute of Health Special Research Fellowship at the British Museum of Natural History. He participated in the Marshall Islands

Coral Atoll Study sponsored by the Pacific Science Board, National Academy of Sciences in 1950, and the Laysan Expedition of 1961. From 1961 to 1963, he was chairman of the Board. In 1959 he participated in the Congo Expedition of the Institut pour la Récherche Scientifique en Afrique Centrale, and in 1964 he served as Director of the Galápagos International Scientific Project. He was a member of the Permanent Committee of the International Congress of Entomology and the International Biological Union from 1953 until his death. He was decorated by the King of Denmark (gold medal) in 1956 for his part in the Galatea Expedition, and by the Government of Ecuador (medal and award of merit) as a member of the Galápagos International Scientific Project, and was named an honorary citizen of Guayaquil in 1964. He also received keys to the City of New Orleans at the time of the National meetings of the Entomological Society of America in that city. He organized the Systematics Colloquium at the Missouri Botanical Gardens in St. Louis in 1958 and Biological Sciences Program at the Pacific Science Congress in Honolulu in 1961. He edited the Pan-Pacific Entomologist from 1939–49 and was a member of various scientific editorial boards, including that of "Pacific Insects," of which Volume II, no. 1, was dedicated to his memory in the following words: "One-time staff-member of Bishop Museum, Member of Editorial Committee of PACIFIC INSECTS, Valued Advisor to the Entomology Department, Bishop Museum, Authority on Hawaiian and Pacific Hemiptera, Honored Teacher of many entomologists." Usinger authored, co-authored, and/or edited *Methods and Principles of Systematic Zoology* (1953), *Aquatic Insects of California* (1956), *Classification of the Aradidae* (1959), *Sierra Nevada Natural History* (1964), *General Zoology* (4th edition, 1965, printed in many languages throughout the world), *Monograph of the Cimicidae* (1966), *Life in Rivers and Streams* (1967), and *Elements of Zoology* (3rd edition, 1968), and more than 200 other scientific publications (see appended bibliography by Ashlock). In such an array of writings it is difficult to single out one for special mention, but certainly his monograph of the "bedbugs" is a classic in modern systematic biology and has been characterized by Gressitt (1967, J. Med. Entomol., 4: 24–25) as the most thorough study of a family of insects for the world as a whole. Hoogstraal (1967, J. Parasitol., 53: 222) comments that "Everyone knows bedbugs but few have adventured with them. Professor Usinger, who has known and adventured around the world and in the laboratory with bedbugs intimately, intellectually, and excitingly for almost 20 years, has presented one of the finest books ever written on a family of parasitic insects.

Much of the information concerning the bedbug family derives from the results of Usinger's six expeditions to Europe, South America, Central America, Africa, and the Orient, and from his superb library, his stimulating leadership of students, and his close collaboration with numerous field collectors and outstanding foreign and American researchers."

He was a member of many scientific societies in addition to the Entomological Society of America and the Society for Systematic Zoology, including the Pacific Coast Entomological Society (President, 1952, Honored Member, 1968), Linnaean Society of London (Fellow), Royal Entomological Society of London (Fellow), American Association for the Advancement of Science (Fellow), American Entomological Society (Corresponding Member), Sociedad Entomologia Peruana (Honorary Member), Hawaiian Entomological Society and the Sierra Club to give a partial list.

As a teacher, Professor Usinger's influence was profound. Through his courses in systematic entomology, aquatic insects and graduate seminars, he touched the lives of generations of undergraduate and graduate students leaving an impact that none can forget. Among those who earned the Master of Science degree under his direction may be mentioned Paul D. Gerhardt, Alexander A. Hubert, Robert D. Lee, Tsuyoshi Yamaguchi, Stephen W. Hitchcock, Norihiro Ueshima, Nualsri Sakdapolrak, and Perry Turner; the Doctor of Philosophy degree, Ira La-Rivers, Willis W. Worth, Larry W. Quate, Toshiyuki Nishida, William R. Kellen, Jon L. Hering, Raymond E. Ryckman, Peter D. Ashlock, John D. Lattin, and Charles W. O'Brien. At the time of his death James Haddock and Wayne Gagné were actively working toward their doctorate degrees.

As I write these words, inadequate as they are to characterize so significant a life, the sun is rising over a beautiful coral-bounded lagoon on one of the many tropical oceanic islands that Usinger loved. As I watch this magnificent sight, my mind goes back to the time when we first met, in pre-college days, and the events that a few years later brought him into the vast Pacific Ocean area and made such a profound impression on his life and evolving scientific philosophy, as well as the events which entwined our personal lives from the moment of a fortuitous meeting while studying nature in the hills back of Oakland, California, in the mid 1920's.

When we first met, Usinger and I lived in different parts of the city and were attending different high schools, Bob going to old "Uni"—the then experimental and student teaching high school for the Univer-

sity of California. However, each of us had a strong interest in natural history. In his case this was nurtured by his Mother, and her profound influence prompted Bob to comment in later years of his Mother—"She was a wonderful person. Through her I knew only encouragement." It was Mrs. Usinger who first accompanied Bob at age 12 to what was then Agricultural Hall to first talk with Professor Herms.

As Boy Scouts we had recently come under the influence of Brighton ("Bugs") C. Cain, a graduate of Stanford University, who was then Naturalist for the Oakland Council, Boy Scouts of America. We quickly became fast friends, and when Mr. Cain recognized that our interest in insects was serious, he arranged for us to meet Dr. Edwin C. Van Dyke, Professor of Entomology at the University of California, and through Van Dyke we were introduced to E. P. Van Duzee at the California Academy of Sciences. He also introduced us to other Bay Area entomologists, amateur and professional, through the Pacific Coast Entomological Society, including E. O. Essig, Frank E. Blaisdell, G. F. Ferris, E. R. Leach, J. O. Martin and others. The collective impact of these individuals on our lives at that stage was tremendous and the influence of Van Dyke and later Mr. Van Duzee, upon the two of us would be difficult to overestimate. The annual field trips of the Pacific Coast Entomological Society were highlights of this period, and two of these inspired us to write semi-popular articles on insect collecting in California (items 12 and 20 in the Ashlock bibliography) and these introduced us to another entomologist, T. D. A. Cockerell (through whom Usinger developed an interest in fossil insects).

By mid high school days, Usinger's taxonomic interests had focused on the Hemiptera, prompted by E. P. Van Duzee and early contacts with H. G. Barber and C. J. Drake. Before graduating from high school he wrote his first paper on the subject, a revision of the genus *Vanduzeeina* in which he described two new species.

Between high school and college, Usinger had a truly marvelous outdoor experience as a member of a select group of Boy Scouts from the San Francisco Bay Area who spent a summer on a nature expedition in the southwest and Rocky Mountains under the direction of Mr. Ansel Hall, then Chief Naturalist of the National Park Service. The details of this experience cannot be recounted here (they are recorded in part in "Scout Naturalists in the Rocky Mountains" by Fast, Kaiser and Kelly), but they broadened his scientific horizons in a manner never to be forgotten, and incidentally, greatly enhanced his collection of insects, which eventually reached the number of 61,919 when presented to the Entomological Museum (California Insect Survey) of the Univer-

sity of California, Berkeley. The first museum of Mesa Verde was started on this trip—with archaeological specimens found by this group and placed in the museum collection.

Usinger's college years were eventful, as was every other experience of his life, and I was fortunate to share many of them. However, space will permit reference to only one or two important episodes. In 1933, Howard Hinton, an undergraduate student interested in the Coleoptera, proposed to Usinger that the two of them make a summer collecting trip to Real de Arriba, Temascaltepec, Mexico, where his father, a mining engineer and amateur botanist, lived. Since neither had any money in those days of the "Great Depression," Hinton proposed that they finance the trip through the sale of specimens. By taking orders from students and faculty they managed to scrape together one hundred and ten dollars. The investors were fully repaid by the collections which Hinton and Usinger brought back, but the remarkable aspect of the whole affair was that they actually made the trip with this amount of money—by hitchhiking and riding in empty freight cars and enduring the most uncomfortable, dirty, and sometimes dangerous kinds of cheap transportation and food. Bob said, however, "We always travelled in the best company during those depression days—the bankers!" The Hinton home itself was most comfortable and a cabin which he had built for them was an ideal base from which to make collecting sorties. Also, Mr. Hinton's herbarium, identified at Kew Gardens in England, was most helpful as a source of host plant information. Usinger and Hinton were especially excited about the aquatic collecting, Usinger bringing back a fabulous collection of naucorids, a group in which he maintained a lifelong interest, and Hinton an impressive collection of Dryopdidae. Aside from the vicinity of Real de Arriba, significant general insect collections were made at Tejupilco and in the tropical lowlands along the Balsas River at Bejucos. He and Hinton, together, collected 10,000 insects on this trip.

Another very important event occurred in 1935 when Usinger was invited to spend a year at the Bishop Museum in Honolulu, while Elwood Zimmerman, then Entomologist on the museum staff, returned to Berkeley to graduate. This was an exciting year, with weekend field trips with O. H. Swezey, F. X. Williams, F. Ray Fosberg and others who introduced him to the natural history of the Hawaiian Islands and taught him how and where to find the native insects in the difficult highland environment. Among the many highlights of his stay in the islands was an expedition to Mauna Kea, Hawaii, sponsored by the Hawaiian Academy of Sciences; graduate study in marine biology at

the Waikiki Laboratory of the University of Hawaii during which he discovered a new species of the marine water strider, *Halobates*, which stimulated a lifelong interest in this group (later monographed by his student Jon Hering); visits to Lanai, Kauai, Molokai and the other islands, mostly on miserable cattle boats; joining the Hawaiian Entomological Society to the Proceedings of which he contributed many important papers; and selecting a little known but highly significant group of Hemiptera, the Hawaiian Orsillini, for biosystematic and evolutionary analysis for his doctoral dissertation at the University of California. By means of almost superhuman effort and determination he devoted his energy to field collecting and studies of these interesting mirid bugs and his 167-page monograph of the Hawaiian *Nysius*, published in 1942 (item 70, Ashlock bibliography) is eloquent testimony of the success of his effort.

While in Hawaii, he also had the unique experience of spending a month collecting on Guam with O. H. Swezey, the "dean" of Pacific Island Entomologists, and his wife under the joint sponsorship of the Hawaiian Sugar Planters' Association and the Bishop Museum. In the Islands the party was hosted by the United States Navy and otherwise unavailable facilities and resources were placed at their disposal. This opportunity, as always, was used to its fullest by Usinger and advanced his scientific interest in the Pacific even further.

On the return trip to Honolulu, he visited the Philippines, where he studied important collections and made a number of highly productive field trips; Lingnan University, Canton, China where he met W. E. Hoffmann and examined his extensive collections; and travelled by train from Kobe, Japan to Tokyo, where he contacted entomologists at the University. When he returned to California to accept a position at the California Academy of Sciences in San Francisco and complete his studies for the doctorate at Berkeley, Usinger had had an inspirational infusion of oceanic natural history and evolution that remained a part of him and colored his philosophy and interests throughout his life.

One final experience of student days at the University should be mentioned, although many must be omitted. This was a 1937 trip to the museums and University collections of eastern United States and Canada, jointly planned by Usinger, Charles D. Michener and myself, all three of whom were working on taxonomic problems requiring examination of types in various institutions and also yearning to meet the leading entomological systematists of that part of the country. We borrowed my father's car and gasoline credit card and with little money, lots of enthusiasm and boxes of critical specimens we started

off. There were many humorous and not so humorous aspects to the trip, but all in all it was a great success. Space will not permit recording details, but highlights for Usinger included a memorable visit with Dr. and Mrs. T. D. A. Cockerell in Boulder, Colorado and a collecting trip to the fossil beds at Florissant, Colorado, stops at Lawrence, Kansas, to see C. J. Drake and H. M. Harris, the United States National Museum, the American Museum of Natural History, and the Provincial Museum at Quebec in search of Provancher types.

A year before receiving the Ph.D. degree, the newly married Martha Usinger, who was then teaching school in San Leandro, California, along with all her other responsibilities typed his thesis, and shortly after it was approved he was invited to join the faculty of the University of California at Davis as a member of the Department of Entomology. He accepted the invitation in spite of a tempting alternative to succeed E. P. Van Duzee as Curator of Insects at the California Academy of Sciences. These years were filled with demanding activities on a young man establishing a home in a new area, organizing courses, and working up material from his Pacific Island collections. While at Davis, the Usingers made many lifelong friends and that University campus always held a special feeling for him. S. B. Freeborn, Professor of Entomology (to mention only one), influenced the nature of Usinger's service during World War II and provided loyal friendship during the years of return to Berkeley. The faith and kindness of Stanley Freeborn and his wife Mary was never forgotten by him.

The stay at Davis was broken by several short trips in western North America. These trips usually were planned to coincide with entomology meetings and did much to broaden Usinger's horizons. They were brought to a close shortly after Pearl Harbor, and in February, 1943 (his first child having been born in January, 1943), he was commissioned as an officer in the U. S. Public Health Service, based at Atlanta, Georgia, where his first assignment was to organize a mosquito control program in the Savannah area followed immediately by assignment to Hawaii to develop means of coping with a dengue epidemic. These years were filled with a variety of programs involving mosquitos and other arthropod vectors of disease as well as entomological activities of broader implications. He remained in service until early 1946, and like other periods in Usinger's life the experience was a significant one. The years of "Malaria Control in War Areas" brought him back not only to his beloved Pacific, but through the Caribbean as well.

At the close of Usinger's World War II service, he returned to the University of California, this time, to the Berkeley campus, where I was

teaching systematic entomology, forest entomology, and for a while, insect morphology. Usinger's first assignment was to offer a course in aquatic insect biology and then, together, we set out to reorganize and expand the Berkeley program in entomological systematics and to lay the groundwork for developing a center in this field. Usinger's academic career at Berkeley was brilliant, and will be chronicled elsewhere in the official University of California publication "In Memoriam." Aside from his outstanding contributions as a teacher, there was scarcely a significant area of University life to which he did not contribute, whether cultural, policy-making, or quasi-administrative. Throughout this aspect of his career, he remained an irrepressible, enthusiastic innovator and promoter of worthwhile academic activities and programs.

Shortly after World War II, the National Academy of Sciences organized a Pacific Science Board, under the directorship of Harold J. Coolidge, to sponsor research programs which could profitably make use of naval facilities throughout the Pacific area. Usinger was involved in the initial planning, served as chairman, West Coast Advisory Committee, and from 1961 to 1963 as Chairman of the Board. Perhaps the most ambitious of many projects to receive early sponsorship was an anthropological survey of Micronesia.

During the academic year 1948–49, Usinger took sabbatical leave from the University, and with support from the U. S. Public Health Service, set up headquarters in London at the British Museum, to undertake to develop a world classification of the Reduvioidea, a group with which he had long been intrigued. He had long been interested also in meeting and working with Dr. William China of the British Museum, who, on seeing this boyish person introduce himself, simply said: "I don't believe it!". His work carried him to the major centers of hemipterology in Europe and permitted him to attend the International Congress of Zoology in Paris and make a lifetime friend of Dr. Jacques Carayon of the museum, and participate in the International Congress of Entomology at Stockholm. At the former he served as an Alternate Member of the International Commission on Zoological Nomenclature which precipitated him into the stormy and controversial period of Mr. Francis Hemming's secretaryship, which had started at the Lisbon Congress in 1935 and picked up momentum at Paris (1948), Copenhagen (1953), and finally London (1958), before enough of the controversy was resolved to utimately permit production of a new International Code of Zoological Nomenclature.

After the VIIIth International Congress of Entomology in Stockholm (1948), which was a delightful experience, Usinger remained on to

work at the Naturhistoriska Ricksmuseum, and it was at this time that he began to assemble his remarkable library of Linnaeana. His hobby of Linnaean biography, bibliography and anecdotes was shared in many ways with his students and friends and resulted in a number of scholarly publications and in his becoming a Fellow of the Linnaean Society. This Linnaean Library is now said to be second to only one in the world—that of a collector in London.

Upon Usinger's return from Europe, he and I began sporadic but hard work on a modern textbook of principles and methods of systematic zoology. Progress however, was too slow for our liking and finally, in space made available to us by my father at the Chabot Observatory in Oakland, we went into complete seclusion and worked, almost, day and night to try to put together a complete first draft. When we were well along on the project, we learned that Ernst Mayr, then at the American Museum of Natural History in New York, was working on a similar book. I flew back to his home and we exchanged drafts of chapters and concluded that we should pool our efforts, which we did, and the book was published in 1953 and remained a standard textbook, being translated into Russian and Arabic, until 1968, when a new edition by Professor Mayr replaced it. Dr. Mayr kindly dedicated this new work to Linsley and Usinger and sent the page proof of the dedication to Bob so he could know of it before he died.

During the next few years and up until his death, Usinger co-authored a series of highly useful and very successful publishing ventures involving textbooks, laboratory workbooks and laboratory manuals in the field of general zoology which have been referred to by title previously and in the Ashlock bibliography. He also co-authored *Sierra Nevada Natural History*, an illustrated handbook highly popular with nature lovers of all levels of background, published by the University Press, 2nd ed., 1968.

More recently, Usinger wrote *The Life of Rivers and Streams*, an outgrowth of years of interest in stream ecology, reflected not only in his technical publications, but dating back to his *Aquatic Insects of California* (1956). This book is a volume of McGraw-Hill's "Nature Library." In this series he also served as consultant on other nature volumes.

In 1950, at the request of the U. S. Navy, the Pacific Science Board was asked to undertake an anthropological and ecological study of coral atolls. Usinger agreed to serve as director of the first part of the project, involving Arno Atoll in the Marshall Islands. The logistics of the expedition were challenging and the experience fascinating,

particularly from the anthropological standpoint. Usinger collected insects, including the few aquatics, and subsequently published papers on Heteroptera of the Marshall Islands (1951, 1952) and "Suggestions for Collecting Terrestrial Invertebrates on Pacific Islands" in the Handbook for Atoll Research (1953).

Usinger, like a number of his colleagues on the Berkeley campus, had always been interested in the fossil record of insects, especially as it related to the more modern floras and fauna. He had briefly collected in the Florissant shales of Colorado (referred to above) and had examined insects in Baltic amber. All of these, however, were of Tertiary age and he longed to see Cretaceous material. In 1955, he and Professor Ray F. Smith, with the sponsorship of the Office of Naval Research, arranged to explore the Arctic slopes of the Brooks Range for Cretaceous amber, of which there were fragmentary published and word of mouth accounts. With the complicated logistics worked out as they went along, and with the resources of the Arctic Research Laboratory at their disposal, they made lonely and at times dangerous trips down the Colville River above Umiat and the Kuk River back of Wainwright. After much initial disappointment (due to the elusiveness of the amber and to conflicting opinions as to where it could be found) samples were found in quantity at several localities and before they left Pt. Barrow Usinger and Smith had detected by hand lens perfect examples of insect remains in this amber of Cretaceous age. The amber collections are still being worked upon by specialists.

By 1957, Usinger's studies of Cimicidae had progressed to the point where some intensive field work in South America was indicated. With his wife, Martha, accompanying him for part of the time, he undertook a three months' trip to that continent, collecting briefly in Panama and northwestern South America, but concentrating primarily in Brazil, Argentina and Trinidad. With logistic support, advice and assistance from many resident entomologists, he managed to find in their natural environments, the cimicids and blood-sucking reduviids he was searching for and at the same time increase his general collection of Neotropical Hemiptera. Shortly after his return he left for the Pacific Science Congress in Thailand, where he not only participated actively in the Congress but availed himself of field trips which contributed to his knowledge of aquatic insects and Heteroptera in yet another part of the world. His journey homeward took him once more to Japan where he visited various entomologists and examined important Hemiptera collections.

The year 1959 was another banner one for Professor Usinger and

his family. He took sabbatical leave from the University, bought a car in England, and set up home in Paris, where he was provided a headquarters, laboratory and office space, and the necessary equipment to carry out systematic and biological studies of cimicids for his monograph, by Jacques Carayon at the Musée National d'Histoire Naturelle with whom he collaborated on some phases of the project. After five months in France, Usinger and his family moved their headquarters to Cairo, where Harry Hoogstraal had provided space and logistical support for field studies through the facilities of the Navy Medical Research Unit laboratory stationed there. With leads provided by Egyptian collectors affiliated with Hoogstraal's research program, he successfully explored in caves and other habitats of cimicids (including pyramids) finding remarkable new species of these as well as reduviids and other Heteroptera.

While headquartered at Cairo, the Usingers visited the Belgian Congo and set up a local base at the Instituto pour la Récherche Scientifique Afrique Centrale at Lwiro. Working out from Lwiro, Usinger visited the various field stations maintained by the Instituto, collected in caves on the shores of Lake Tanganyika, where he also collected aquatic insects extensively. At Mont Hoyo he made additional finds of scientific import and briefly visited Uganda. (Incidentally, he established a friendship with pigmies in the Ituri Forest who also became friends with Roberta and Richard Usinger, teaching the latter to shoot with their primitive bows and arrows.) After returning to Cairo, the Usingers resumed their travels, coming back to the United States by way of India, Hong Kong and Japan, thereby having encircled the world.

In 1961, Usinger served as Organizer for Biology for the Pacific Science Congress in Honolulu. Prior to the Congress, he and Professor Paul R. Needham of the Department of Zoology, University of California, Berkeley, with whom he and his students had collaborated for many years on limnological projects at the University's Sagehen Creek Experiment Station, attempted to introduce two species of mayflies from California into streams around Kokee, Kauai, as food for rainbow trout which had been planted there much earlier but were not doing well. Although the mayflies apparently did not become established during the project Usinger made a survey of potential local mayfly predators and discovered, among other things, two new species belonging to wingless genera of emesine reduviids.

Following the Congress, Usinger joined a group of biologists, with George Butler as the other entomologist, in a collecting trip to Laysan,

one of the unique islands of the Hawaiian leeward chain, and to Kure Atoll. As usual, the results were fruitful, adding in particular to the knowledge of insular speciation in *Nysius*.

Early in 1962, once again pursuing his cimicid project, Usinger traveled to southern Chile, where with the assistance of Luis Peña, he traveled extensively in *Auricaria* and *Nothofagus* country in search of primitive cimicids. After numerous disappointments and frustrations, in a hollow opening in a *Nothofagus* tree, he discovered a remarkable new genus of bat bugs, later called *Bucimex*, which proved to be intermediate in its characters between the primitive *Primicimex* and the more typical bedbugs of the genus *Cimex*. He considered this the most significant discovery of the entire cimicid project. While in Chile, he availed himself of the opportunity to make other collections of Heteroptera of special significance. These included primitive lygaeid-like forms, and subantarctic Aradidae and Teloridiidae. Before leaving for home he also visited Punta Arena on the Straits of Magellan.

Possibly the greatest highlight of Usinger's scientific career was his participation in the 1964 Galápagos International Scientific Project, of which he was officially Director and Professor Robert I. Bowman of San Francisco State College, Co-Director. This conclusion is not only attested by the fact that he devotes nearly 100 pages of his autobiography to this event, but having had the privilege of traveling to and from the Galápagos with him, sharing quarters at the Darwin Research Station on Santa Cruz Island, and making together many local field trips to various islands in the Archipelago, I know from personal experience that he attached great significance to this event. The following paragraphs, quoted from his autobiography, not only record some of the background of the project, but reveal some of his feelings about it:

"The GISP, as planned by the University of California Extension Division in collaboration with faculty members, was to bring together scientists representing all the special fields of Galápagos research. A symposium on existing knowledge of the Galápagos was held in Berkeley and discussions of new lines of investigation occupied the hours while sailing to the islands. Leading scientists from all over the world were invited to participate and there was a group of young scientists to be initiated into this natural laboratory of evolution. Important objectives were the furtherance of conservation of the vanishing species in this unique archipelago and support of the newly established laboratory of the UNESCO sponsored Charles Darwin Foundation.

"In 1962 the project was still in the dream stage, since we had no ship and no money. Then, through the vision of Capt. H. E. Richter,

FIG. 1. Usinger receiving certificate from the "Mayor" of Guayaquil in recognition for his participation in the 1964 Galápagos Symposium.

Superintendent of the California Maratime Academy, and Capt. C. B. Bowman it seemed possible that the 400 ft. training ship "Golden Bear" might be fitted with extra bunks to carry sixty scientists to and from the islands as part of the annual training cruise for future merchant marine officers. The second key decision that made the trip possible was a grant from the National Science Foundation of $121,650. Other crucial sources of support were the Shell Oil Company (fuel oil for the Golden Bear through Dr. Harold J. Coolidge) and the Belvedere Foundation of M. Kenneth Bechtel (funds for equipment and transportation). With such help we were definitely in business. Then came unexpected support that made an ordinary expedition into an experience unique in the annals of Galápagos exploration. The U. S. Navy arranged for the USS Pine Island, with its sea planes and helicopters to assist us, a U. S. Air Force C-130 plane transported over 100 participants from Latin America, including members of the diplomatic corps, destined for the dedication of the Darwin Laboratory. And the Army contributed C-rations that made feasible the establishment of field parties in the most remote and inaccessible places. The Pacific Science Board through Dr. Harold J. Coolidge played a key role in all

FIG. 2. Usinger in characteristic collecting attitude.

of these arrangements and also in final permission in Washington to use the "Golden Bear." The Government of Ecuador gave all-out support including air force planes, an LST to help unload the "Golden Bear," and the navy patrol boat that provided much interisland transportation.

"Early in January, 1964, the invited scientists began to arrive from all parts of the world. Sir Julian Huxley, evolutionist and close student of Darwin's work, was the keynote speaker at the Berkeley symposium. He told of the crucial importance of the Galápagos experience in Darwin's career. Dr. Victor Van Straelen, Director of the Darwin Foundation, who died three weeks after participating in the project, spoke of the role of the Foundation in Galápagos research and the hope for implementing conservation laws to preserve the unique plants and animals of the Galápagos. After other more technical symposia the sailing date, January 10, 1964, arrived. With banners flying and television cameras turning, the "Golden Bear" cast her moorings and the Galápagos International Scientific Project was launched. Accommodations were described as "somewhat less than steerage" with temporary four-

FIG. 3. Usinger (right) and Linsley (left) amid scientific equipment after landing of the 1964 Galápagos International Project at the Darwin Research Station, Isla Santa Cruz.

decker canvas bunks crowded into a ward room, but the scientists were not bothered by such trivia and the voyage proved to be a pleasure for all. Meetings were held constantly to outline research plans, decide on joint projects, and discuss controversial theories. Dr. R. I. Bowman, co-director and old Galápagos hand, drew up the plans for field parties and Dr. Nathan Cohen, coordinator for University Extension, organized the complicated logistics.

"On January 19 the "Golden Bear" and the USS Pine Island converged on Academy Bay on the south Shore of Santa Cruz Island. The Pine Island carried scientists, diplomats, and official representatives of scientific agencies throughout the world who, earlier in the day, had flown from Guayaquil to the airstrip on Baltra Island. Probably each

person had a different sensation on first sighting the Galápagos. My own was colored by reading everything on the subject as a boy in anticipation of joining an expedition that never materialized. Landing on Baltra, I stepped out into a new world. To my eyes the south slope of Santa Cruz Island was beautiful. From the shore-line mangroves to the deep green highland forests it fulfilled my expectations completely. But my eyes kept returning to the most unique Galápagos scene, the weird cactus forest in the foreground. No pictures or words had fully prepared me for this experience and, curiously, the islands never lost their fascination in later weeks as I landed on one after another. Perhaps islands appeal to the imagination as something neat and sharply delimited, a clean break from the work-a-day world. But to the naturalist each island is something more—a microcosm or world of its own. It makes no difference how large or how small, there is a challenge to discover how the various animals and plants have worked out their destinies together. Usually the patterns of life are simpler than on the mainland with more individuals and fewer species. In an attempt to understand these intricate interrelations, each of us of whatever age would 'hit the beaches running' during the next few weeks."

Usinger did just that, whether wading ashore through the surf or dismounting from a helicopter and thereby managing to collect on every island in the group. It will be many years before the results of his personal efforts are known and evaluated. A few statistics are already indicative of the magnitude of his contribution to the ultimate knowledge of Galápagos Hemiptera. Prior to the Expedition, he and I assembled jointly as much information about the Galápagos insect fauna as possible. We were able to accumulate a list of 618 species (Linsley and Usinger, 1966), of which 41 were Heteroptera, 38 Homoptera. As of this writing, five post-expedition publications on these two groups have come to my attention, reporting 34 new species and subspecies of Homoptera and 26 of Hemiptera, most of which were collected by Usinger or his protegé, Peter Ashlock, with help from other members of the Expedition.

In the summer of 1964, the Usingers went to Europe primarily to attend the Entomological Congress in London, but also as a graduation gift to their daughter, Roberta who graduated from the University of California, Berkeley, in June of 1964. They took advantage of this opportunity to visit parts of the continent that they had not been to previously (plus Spain, Gibraltar, and Tangier) and before and after the Congress, Usinger studied cimicid types as well as those of certain Galápagos Hemiptera. During the following summer, the Usingers

visited the Hawaiian Islands, largely for relaxation, but also to help plan, as chairman, the Pacific Area International Biological Program. However, he did find time for some collecting on Maui with Peter Ashlock, J. W. Beardsley and D. Elmo Hardy.

During 1967, Usinger became aware of the first symptom of what turned out to be his fatal illness. On 10 November 1967, he underwent major surgery from which he was told he would recover completely and was encouraged to attend the meetings of the Society of Systematic Zoology in late December in New York, over which he presided as President. However, in April of 1968 the pain returned, and he underwent another operation. It was found that all of the growth had not been successfully removed after all, but had proliferated. From that point on his health progressively deteriorated but his spirit remained undaunted. With the constant attention and encouragement of his wife, Martha, he managed to cram a truly remarkable amount of activity into the last few months of his life. Although the loss of Robert L. Usinger will be keenly felt for years to come, few have lived such a full, exciting and rewarding life, and the impact of his warm personality, high level of spirit, enthusiasm and personal concern for people will always be remembered by those who knew him, no matter how casually. At the suggestion of Martha Usinger, a memorial fund has been established in his memory at the University of California, Berkeley.